STATE OF MONTANA
MONTANA DEPARTMENT OF TRANSPORTATION
JOB PROFILE

☒ Update
☐ Formal Review

Date Submitted _____

SECTION I - Identification

Working Title: Chief Chemist

Department: Transportation

Job Code Number: 192316

Division & Bureau: Engineering/Materials

Job Code Title: Chief Chemist

Section & Unit: Physical Test

Pay Band: 6

Work Address: 2701 Prospect Ave
Helena, MT 59620

Position Number: 40007

Phone: 406-444-6300

☐ FLSA Exempt ☒ FLSA Non-Exempt

☒ Non-Union ☐ MPEA ☐ Blue Collar

Profile Completed By: Ross "Oak" Metcalfe, P.E.
Testing Operations Engineer

Work Phone: 406-444-9201

Work Unit Mission Statement or Functional Description:

The MDT's mission is to serve the public by providing a transportation system and services that emphasize quality, safety, cost effectiveness, economic vitality and sensitivity to the environment.

The Highways and Engineering Division prepares projects for bidding and coordinates highway construction. The Division is made up of the Materials, Construction, Right-of-Way, Bridge, Traffic and Safety, Environmental Services, Engineering Oversight, and Preconstruction bureaus; the CADD Systems and Engineering Management Support sections; and five District Construction Offices in Missoula, Butte, Great Falls, Glendive, and Billings for budget and workforce purposes. Personnel in the Construction Bureau are responsible for supervising highway construction from the time a construction contract is awarded to a private contractor until the project is completed and the work approved. They ensure roads and bridges are built or reconstructed according to established standards.

The principal goals of the Materials Bureau of the Department of Transportation are to develop and implement comprehensive data collection, testing, and analysis programs that facilitate pavement project selection and pavement surface and subsurface design that addresses Montana's most important statewide transportation needs and to support the quality of materials incorporated into Montana's highway system. These activities help officials select projects and provide information for short and long-range engineering and construction programs. These goals are addressed through the complex interaction and interrelationship of the Bureau's three Sections. The Bureau consists of the Geotechnical Section, Physical Testing Section, and Pavement Analysis and Research Section.

Describe the Job's Overall Purpose:

This position serves as MDT's Chief Chemist and Analytical Laboratory Supervisor. The position is responsible for administering scientific research and development projects; managing laboratory operations, activities, and resources; and performing a variety of other duties as assigned. In these roles, the position serves as the Department's primary authority in a range of scientific research, testing, analysis, and development. The position reports to the Materials Bureau Chief and directly supervises two staff positions (2.0 FTE) within the laboratory.

SECTION II - Major Duties or Responsibilities

This section should be a clear concise statement of the position's major duties and the approximate percent of work time for each duty. ***% of Time***

A. RESEARCH AND DEVELOPMENT 50%

1. Directs, plans, and coordinates various research and development projects within the Department's Analytical Laboratory to ensure the scientific integrity of methodologies and results; safety, efficiency, and cost-effectiveness of laboratory operations and activities; and the development of innovative products and technologies for highway construction and maintenance.

2. Directs and coordinates the research and development of laboratory methods and procedures to provide effective analysis of new construction materials and chemical properties; ensure the scientific and legal integrity of methods and conclusions; and promote efficient and cost-effective operations and services. This involves research and analysis of theoretical methods, recent discoveries, and new or untested products and chemistries; designing scientifically valid experiments to evaluate and refine methods and procedures; and documenting effective methods and procedures for publication and/or adoption.

3. Develops quality assurance and scientific control measures to ensure the integrity of laboratory research, analyses, and conclusions. This involves evaluation of new and existing methods and procedures, instrumentation, staff competencies, State and federal standards, legal requirements, and other issues; developing procedures to validate laboratory methods and conclusions; and resolving deficiencies.

4. Directs, coordinates, and/or performs complex and varied analyses on geophysical and construction samples to develop scientifically valid conclusions. Analyzes highly complex, non-routine, or special investigative samples to identify and quantify new materials compositions, applications, critical failures, or other characteristics by developing new methods and instrument techniques.

5. Evaluates the reportability of data and assesses whether normal detection limits can be met to report analytical findings by evaluating analytical chemistry QA/QC requirements and judging when established methodologies cannot be applied routinely to a given sample.

6. Develops and defends research findings, statistical evaluations, and analytical data. Develops or coordinates comprehensive project reports to explain and justify analytical methods, procedures, and conclusions; ensure the accuracy and completeness of laboratory data records; and exchange theoretical or developmental ideas with other professional laboratory staff, agency officials, university researchers, and others. Ensures appropriate documentation and reporting of precedent-setting analytical work for future laboratory use.

7. Monitors state and national scientific and construction-related issues; develops recommendations; and provides expert consultation and advice to the Bureau Chief, Division Administrator, and other officials on scientific issues related to construction materials analysis. The incumbent must consider a variety of complex factors related to scientific standards, industry practices, and applicable State and federal regulations and requirements to develop and justify viable recommendations and solutions.

8. Represents the laboratory and Department at public meetings, professional conferences, formal and legal proceedings, and consultations with other government or private interests to develop State and national laboratory standards, policies, and methodologies. This includes the presentation, defense, and critical assessment of developmental standards, methods, and practices. Represents the Department or assigns staff representation at interagency work groups to provide coordination with other programs, ensure that the Laboratory is effectively represented, and provide scientific expertise and advice. Serves as an expert witness in legal proceedings as directed.

B. LABORATORY ADMINISTRATION 35%

1. Directs and oversees chemical analyses within the laboratory by planning and prioritizing activities, monitoring progress and resolving impediments, and providing advanced scientific support in the areas of analytical methodology, laboratory procedures and techniques, instrument operation and maintenance, laboratory safety, quality assurance/quality control procedures, data interpretation, and computer processing.

2. Assesses the overall effectiveness of Laboratory operations, resources, and services to develop measures for improving the quality, efficiency, safety, and cost-effectiveness. This includes proactive evaluation of new scientific methods, standards, and technologies; changing Department needs; and available resources. Directs and oversees laboratory safety practices to ensure compliance with guidelines and regulations.

3. Develops and establishes Laboratory policies, procedures, and guidelines that agree with State and federal requirements and provide flexibility for implementation and coordination with other bureaus, State and federal agencies, and professional standards. This requires assessment of new scientific advances, laboratory technologies, industry practices, State and federal regulations, and other factors to develop unique approaches to policy and program issues.

4. Directs and oversees the operation, maintenance, and repair of laboratory instruments to maximize operability, ensure effective instrument performance, and maintain strict calibration and performance evaluation protocols. This involves establishing instrument performance and maintenance requirements; diagnosing and resolving unusual or difficult malfunctions involving mechanical, electronic, and computerized components; and determining optimum configurations.

5. Conducts detailed technical reviews and critiques of analytical data to ensure scientific and legal integrity of procedures and results. Develops solutions to a broad range of laboratory research, analysis, and operational problems and impediments identified by the incumbent, referred by subordinate staff, or determined by Division management. Determines the need for new or additional analyses to ensure quality and resolve errors or discrepancies. Approves data when evaluation is completed and acceptable.

6. Serves as the Department's chief technical expert and principal liaison on issues related to analytical laboratory operations and activities. Establishes and maintains professional contacts with other State, federal, and private laboratories to coordinate analytical methods and techniques; provides expertise on hazardous materials, chemical interactions, new products, and other issues; and interprets and explains analytical results, chemical effects, additional sampling, laboratory procedures, and quality assurances.

7. Determines and fulfills equipment procurement needs of the Laboratory including responsibility for developing specifications, ensuring compliance with Department procurement practices, developing budget justifications and submitting requests, and integrating equipment into laboratory operations to ensure maximization of resources.

C. SUPERVISION 10%

1. Directly supervises professional and technical Laboratory staff (2.0 FTE) involved with ongoing research and development, chemical analysis, and laboratory operations. This involves establishing and reviewing work plans and procedures, handling disciplinary actions and resolving conflicts, and training and providing recommendations for terminating staff.

2. Establishes and revises overall program work plans, priorities, and procedures and monitors progress through meetings and consultations. Conducts staff meetings, disseminates information, and promotes information exchange to support and advance Bureau and Division goals and objectives.

3. Develops and recommends overall responsibilities of subordinate positions. Recommends and justifies requests for additional personnel. Determines and fulfills training needs of subordinate staff and provides ongoing guidance and technical assistance as necessary.

4. Establishes objective, measurable, and observable performance standards for subordinate positions. Monitors and manages the performance of subordinate and completes performance appraisals. Implements and monitors corrective actions, including disciplinary measures. Ensures staff compliance with State and agency personnel rules, regulations, and policies.

5. Performs a variety of other supervisory responsibilities, including approving leave requests, maintaining filing systems, ensuring the effective distribution of reports and documentation, and other tasks.

D. OTHER DUTIES 05%

This position performs a variety of other duties in support of ongoing Laboratory operations and Division objectives. This includes managing special projects, representing the Laboratory and/or Department at various meetings and conferences, participating in ongoing training and educational programs, and performing a variety of other duties as assigned.

The following duties and/or specific tasks listed under section II above are considered "essential functions" because they require specialized expertise and skill and are the primary reasons the job exists (they must be performed by this position with or without accommodations):

A. Research and Development
B. Laboratory Administration
C. Supervision

The following mental and physical demands are associated with these essential functions:

PHYSICAL

- Lifting heavy objects (samples, analytical equipment, etc.) up to 50 lbs.
- Remaining seated for extended periods of time, with occasional walking; standing; bending
- Short travel for training, meetings, and conferences
- Operating power tools and equipment
- Operating a personal computer
- Communicate in writing, in person, and over the phone

MENTAL

- Ability to multi-task
- Demands for accuracy in all aspects of work
- Ability to meet inflexible deadlines
- Decision making that affects public health and safety
- Computing arithmetic operations
- Comparing data
- Compiling information
- Analyzing
- Coordinating

- Synthesizing
- Instructing

Does this position supervise others? ☒ **Yes** ☐ **No**

Number directly supervised: 2.0
Position Number(s) of those supervised: 40028, 40018

Attach an Organizational Chart.

SECTION III - Minimum Qualifications - List minimum requirements for the first day of work

Critical knowledge and skills required for this position:

KNOWLEDGE:
This position requires extensive knowledge of analytical, organic, and inorganic chemistry; physics; analytical methods; scientific procedures and techniques; quality assurance/quality control protocols; statistical analysis; toxicological effects of various chemicals; laboratory safety; equations and calculations; laboratory management and organization; method development; ruggedness testing; and laboratory record keeping. The position also requires thorough knowledge of program planning and administration; relevant State and federal laws and industry practices; and general principles of computer science. Supervisory responsibilities require knowledge of Department and State personnel procedures and policies, employment law, program requirements, and personnel management practices and techniques.

SKILLS:
This position requires advanced skills in scientific instrument operation and maintenance; program management and plan implementation; and excellent written and verbal communication skills. The position also requires skill in managing multiple projects concurrently; developing analytical reports; and balancing and adjusting human, material, and financial resources to accomplish project objectives.

Behaviors required to perform these duties:

See MDT Core Behaviors.

Education:

Check the one box indicating minimum education requirements for this position for a new employee the first day of work:

☐ No education required
☐ High school diploma or equivalent
☐ 1-year related college/voc. training
☐ Related AAS/2-years College/vocational training
☐ Related Bachelor's Degree
☒ Related Master's degree

Please specify the acceptable fields of study:

Chemistry

Other education, training, certification, or licensing required (specify):

None

Experience:

Check the one box indicating minimum work-related experience requirements for this position for a new employee the first day of work:

☐ No prior experience required	☐ 3 years
☐ 1 year	☐ 4 years
☒ 2 years	☐ 5 or more years

Other specific experience (optional):

The position requires two (2) years of progressively responsible experience in an analytical laboratory, including one year working with computerized analytical instrumentation.

Alternative Qualifications:

This agency will accept alternative methods of obtaining necessary qualifications.

☒ Yes ☐ No

Alternative qualifications include:

Candidates with a bachelor's degree in chemistry or related field plus four (4) years of laboratory experience may be considered as qualified for this position.

SECTION IV – Other Important Job Information

☐ Fingerprint check
☐ Valid driver's license
☐ Background check
☐ Other; Describe

Other information including working conditions such as shifts, lifting requirements, travel or hours:

Predominant work is performed in a professional laboratory environment, involving:

- Exposure to hazardous chemicals and noxious substances
- Exposure to harsh or caustic materials and agents
- Exposure to high temperature substances

SECTION V – Signatures

Signature indicates this statement is accurate and complete.

Employee:

Name: _____ Title: _____

Signature: _____ Date: _____

Immediate Supervisor:

Name: R. Scott Barnes, P.E. Title: Physical Testing Section Supervisor

Signature: _____ Date: _____

Bureau Chief:

Name: Matt Strizich, P.E. Title: Materials Bureau Chief

Signature: _____ Date: _____

Division/District Administrator:

Name: Loren Frazier, P.E. Title: Engineering Division Administrator

Signature: _____ Date: _____

Department Designee:

Jennifer Jensen/Designee Chief Human Resources Officer

_____ Human Res

Signature: _____ Date: _____